

Clinical Pathology



FIP AND CORONAVIRUS 7b PROTEIN ANTIBODIES

Background

Feline Infectious Peritonitis (FIP), caused by a feline coronavirus, can occur as an effusive peritonitis or pleuritis with a grave prognosis. Alternatively, a more chronic course with granulomatous (“dry”) lesions occurs, affecting multiple organs. This also has a grave prognosis. The early, non-invasive diagnosis of FIP is difficult.

Objectives

To determine whether the presence of feline coronavirus (FCoV) 7b protein consistently correlates with the occurrence of FIP in cats.

Procedure

Ninety-five serum samples from cats with FIP were submitted to the laboratory for various diagnostic assays, and 20 samples from specific-pathogen-free cats were tested as negative control samples.

The 7b gene from a virulent strain of FCoV was used in antibody detection assays using western blot analysis of serum samples. Results were compared with those of an immunofluorescence assay (IFA) for FCoV-specific antibody and correlated with clinical signs.

Results

IFA-seronegative cats were seronegative for antibodies against the 7b protein. Some cats with detectable FCoV-specific antibodies, as determined by IFA, but no clinical signs of disease were seronegative for antibodies against the 7b protein. Serum from cats with FIP had antibodies against the 7b protein, including cats with negative results via conventional IFA. However, some cats without clinical signs of disease, as well as cats with conditions other than FIP that were seropositive to FCoV using IFA, were also seropositive for the 7b protein.

Author Conclusion

Expression of the 7b protein, as indicated by detection of antibodies against the protein, is found in most FCoV-infected cats. Seropositivity for this protein is not specific for the FCoV virulent biotype or a diagnosis of FIP.

Inclusions

Two figures, 1 table, 17 references.

Editor Annotation

FIP remains an enigma. Presence of the coronavirus is not consistent with the development of FIP. The ability to make this diagnosis in a cat without effusive clinical signs is going to take a massive amount of additional study. This study confirms that fact. Experience in our diagnostic laboratory has confirmed that the gold standard for diagnosis requires histopathology and demonstration of the coronavirus antigen via immunohistochemistry staining in inflamed tissue.

These authors were hoping that this specific protein antibody would be confirmatory for the disease. They found, as has been confirmed with PCR testing, that the FIP-associated coronavirus is present in a high percentage of cats without FIP. Identification of the antibody or antigen in a cat does not always correlate with disease. The disease most likely is a combination the virus, either genetically modified or the street virus, reacting in a cat with the appropriate immunologic or innate immunity interaction to result in disease. In other words, like other conditions in the cat, it requires the cat's immunity and virus interaction to become pathogenic. The virus without an imbalanced immunological reaction in the cat is likely to reside without any pathogenic results.

Serologic testing is not helpful with FIP diagnosis due to the large number of cats carrying the virus. In my opinion, the FIP antibody titer needs to be dropped from our diagnostic profiling in the cat. The results of FIP testing are commonly confusing. Thus, more and more veterinarians are ignoring these results, as should be. If you need a confirmed diagnosis of FIP, a biopsy of lesions or necropsy with demonstration of the coronavirus antigen in inflamed tissue is required. This will be the norm for some time to come. A new, more effective approach will be required to improve upon this reliable yet inconvenient means of diagnosis of FIP disease. (LDM)

Kennedy MA, Abd-Eldaim M, Zika SE, et al. Evaluation of antibodies against feline coronavirus 7b protein for diagnosis of feline infectious peritonitis in cats. *Am J Vet Res* 2008;69:1179-1182.